

# In Defense of the Land Residual Theory and the Absence of a Business Value Component for Retail Property

*Norman G. Miller\**  
*Steven T. Jones\*\**  
*Stephen E. Roulac\*\*\**

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**Abstract.** The temptation is strong for arguing that property values can be broken down into land, improvements and business value, as only land and improvements are subject to property tax. As sympathetic as the authors are to this motivation, the notion of a long-run business value component for retail property is refuted and the land residual value theory reasserted, while at the same time admitting the possibility of first owner entrepreneurial or development-based value creation. It is argued that any excess property productivity will eventually become attached to the land, and last that option values are an important aspect of land values that would be affected when suggesting that the appropriate value of a given property is the cost of substituting adjacent property.

## Introduction

Classic economic theory suggests that the value of land as a factor of production depends on the ability of the land to produce revenues in excess of the required payments to all other factors of production. Payments to land are viewed as the residual productivity remaining after all other mobile factors of production have been compensated at their fair market values.<sup>1</sup> Developers often use the land residual theory to determine the maximum potential value of a site after subtracting all other non-land costs from the total projected property value.

Recent papers by Fisher and Kinnard (1990) and by Fisher and Lentz (1990) argue strongly that retail property valuations should include three major components: land, improvements and business value. Dissecting total property value into two or three components requires a theory and corresponding methodology that establish the appropriate allocation of value to each component. The land residual value revisionists' arguments, which will be discussed fully in this paper, imply the following three conclusions: First, the value of a potential retail site is based on either the second most productive use of land in a given area, given that an operational shopping center has already been developed, or an adjacent site that was just not "lucky" enough to be selected for development. Second, adjacent parcels are viewed as true substitutes, even with an operational shopping center nearby. Third, any added site value beyond the construction cost of the improvements and the cost of substitute sites is ascribed to entrepreneurial value for business decisions such as design, tenant mix and management.

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\*Department of Finance, University of Cincinnati, Lindner Hall, Cincinnati, Ohio 45221-0195.

\*\*University of Cincinnati, Lindner Hall, Cincinnati, Ohio 45221-0195.

\*\*\*The Roulac Group, 900 Larkspur Landing Circle, Suite 125, Larkspur, California 94939.

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The crux of the debate between the land residual theory and the business value component argument lies in deciding which factor of production should receive the excess productivity, if any, inherent in the operation and ownership of real estate. The land residual theory suggests that such excess productivity should run with the land as an immobile factor of production, whereas Fisher and Kinnard (1990) and Fisher and Lentz (1990) argue that it should be considered business value.

Clearly, the business value component argument is enormously attractive to property owners facing significant property tax burdens on land and improvements. Establishing even a small proportion of total value as attributable to "business value" could imply the potential for billions of dollars of property tax appeal cases.

In this paper, we attempt to explain why after entrepreneurial profits are captured, excess productivity becomes logically attached to the land, despite the strong temptation to assign such value elsewhere. We argue that all land valuation includes an option value based on the potential increase in value if conversion to new uses is possible in the future. We further argue that the total value of retail property in a given geographical area is relatively constant at any given point in time (or at least proportional to the purchasing power in the area). Nevertheless, we note that increasing the value of a particular area relative to other areas is certainly possible in a world of expanding market access and strong merchandizing.

Defining the relevant competitive market geographically will certainly change over the next decade, to the point that the relevant market becomes the nation and eventually the world. But for now assume a simplified illustration of a market model where significant consumer access is required and transportation costs are non-trivial. Within a primary geographically defined market, any increase in retail dollar market share tied to a specific property at one location comes at the expense of other sites; the total values of other properties within the competitive area are in fact lessened as a result of a decreased option value on each competitively similar site.<sup>2</sup> From a property tax administrator's point of view, the total property tax collected is simply redistributed when development occurs. The current and future value will be higher for one or more parcels, and lower for others, each time a new development occurs. We should note here that this statement is true for a given level of retail sales potential. Changes in demographic factors such as population, income, consumer spending proclivities, and so on, will affect the total property values in an area. However, for any given combination of all these parameters, new retail development will simply lead to a redistribution of the area's total real estate value.

We also argue that, regardless of one's beliefs about the long-term persistence of entrepreneurial value,<sup>3</sup> there is in fact little reason to "adjust" for such value in determining the real estate value of a shopping center.<sup>4</sup> Indeed, some degree of monopoly attributes may run with a property and a specific business use.<sup>5</sup> Finally, we concur with Karvel and Patchin (1992) in making the logically consistent observation that, in a world where "business value" adjustments are considered correct, assessments of negative business value are inevitable. Thus, if the increase in value created by unusually effective management and/or entrepreneurship is "business value" that must be subtracted from total value to find a "true real estate value," then any *decrease* in value caused by *ineffective management* decisions is "negative business value" that *must be added back* to the total value to find the property value. Such assessments would, of course, lead to higher tax burdens on the affected land and improvements than would otherwise exist.

To clarify the context of our arguments for the continued applicability of the land residual theory to the case of shopping centers, as well as other property types,<sup>6</sup> we divide our discussion into four sections. The next section briefly outlines the “traditional” or “classical” land residual views of Ricardo and von Thunen. Section three provides an overview of the “business value” arguments and discusses some of the work relating these arguments to shopping centers. In the fourth section, we support our argument that the land residual theory is more appropriate than the notion of business value in the case of shopping centers. Section five provides a summary with conclusions.

## The Traditional Land Residual Theory

The traditional view of land valuation has been based on the notion (originally developed in an agricultural context) that payments to land represent “a residual, equal to the excess of revenues from the sale of goods produced on the land over remunerations to non-land factors used in production.”<sup>7</sup> Thus, each factor of production, including land, will be paid an appropriate competitive price.

The arguments for this notion of land value can be summarized in the following simple model. First, the value of the land,  $V$ , is a function,  $f$ , of the amount of rent,  $r$ , that can be charged per period of time,  $t$ :

$$V=f(r_t) . \quad (1)$$

Next, the rent that can be charged per unit of land per unit of time can be seen as the “residual” value of net site productivity,  $P$ , per unit of land,  $l$ , per period of time,  $t$ , less transportation costs,  $TC$ , over distance to the market,  $d$ :

$$r_{lt}=P_{lt}-TC(d) . \quad (2)$$

Transportation costs are an increasing function of distance, where distance might be measured to one or more economic market centers. Site productivity depends on gross sales, which are affected by merchandizing efforts, the cost of goods sold, operating costs, and the “normal” or “expected” level of profit. Sales are partially dependent on the total sum of all the distances to all the potential customers in the area.<sup>8</sup> Sales are also dependent on the distances from all potential customers to competitors. At any given point in time, sales within a competitive area are deemed to be fixed, although defining the relevant competitive area will clearly be more difficult in the 21st century.<sup>9</sup> As one location becomes more productive in terms of sales per unit of space per unit of time, it does so to the detriment of one or more other sites. Such changes in productivity affect the amount of rent that can be charged, which in turn affects the value of the land.<sup>10</sup>

In addition, however, we should recognize that the value of land is not limited to the value of its current use. Further, the total value of land includes an “option component” reflecting the value of the option to convert the land to a different use in the future. This option is best seen as an American option with an infinite life, and with an exercise price equal to the cost of conversion. Thus, with all other things equal, land that can be converted to other uses has a greater option value. Clearly, the option value also varies positively with the probability and magnitude of upside use opportunities, and varies negatively with such constraints on these opportunities as regulation, building codes, and

so forth.<sup>11</sup> Equation 1 can be broken into two components, where  $r$  is broken down into the expected current use rental stream,  $cr$ , and potential future rent from new uses,  $fr$ :<sup>12</sup>

$$V = \begin{array}{c} \text{Current} \\ \text{Use Value} \end{array} f(cr) + \begin{array}{c} \text{Future} \\ \text{Use Value} \end{array} f(fr) . \quad (3)$$

## The Business Value Argument

### *Realty versus Personalty and Intangibles*

It is an accepted appraisal principle that the value assigned to an appraised property should relate solely to the value of the real estate itself, and should exclude the value of personal property or intangible property. This principle has led to the argument that segregating the “business value” of various properties from the total value of such properties is necessary to find the correct value of the real property itself. Otherwise, according to this argument, property assessments for tax purposes may overstate true real estate values and lead to excessive taxes on those properties. As Fisher and Kinnard (1990) argue:

The tangible personal property and intangible components must be separated from the real property component of an operating property. In many instances the separation and measurement of the values of individual components of operating properties is admittedly difficult. Nevertheless, that difficulty does not constitute an excuse for ignoring the issue. It must be addressed directly and in a straightforward fashion. The business enterprise valuation approach is one way of doing so.

Karvel and Patchin (1992) also address the business value issue, and state, “An appraiser’s obligation is clear. To the extent that business or going-concern value exists, it should be recognized as a value separate and distinct from the value of the real property with which it is associated.” They go on to cite a recent state court decision that succinctly sums up the appraisal problem; “The key is whether the (income) value is appended to the property, and is thus transferable with the property, or whether it is, in effect, independent of the property so that the (income) value either stays with the seller or dissipates upon sale”.<sup>13</sup>

It should be noted that the argument for separating business value obviously exists when an appraisal includes a going-concern value as part of a total appraisal, but such going-concern value should be based on the net expected profitability of the business entity given that a competitive rent is already paid.<sup>14</sup> There is no reason to expect any business value component would be passed on to the owner of the real estate, beyond the competitive rent that is paid.

### *The Development Cost Argument as It Relates to Shopping Centers*

One argument advanced by business value proponents for the separation of value into land, improvements and business value is that the real estate (land and improvements)

value should be equal to the cost of developing a similar structure on nearby land. This argument is flawed in at least two or three ways. It fails to recognize the interdependency of similar land uses in terms of dividing or capturing shares of a fixed total market at a given point in time. First, the existence of an operational shopping center will lower the option value on adjacent land, thus lowering the total value of the adjacent site. Therefore, the two parcels would not be equivalent substitutes with similar potential for productivity. Second, due to the obvious reduction in uncertainty for a fully operational site as opposed to raw land, the nearby land requires a much higher discount rate for any similar expected productivity, thus leading to a lower land value (although similar productivity levels are unlikely once a new shopping center further dilutes the market). Thus, the two sites are not similar substitutes, even if physically adjacent and identical in all respects, whenever one site is already operational. Third, albeit a minor point, the pragmatics of a new competitive retail venture in the same vicinity are questionable. Major investments in traffic management might be required, and strong political opposition is probable.

### *Hotels and Shopping Centers*

The hotel is perhaps the most frequent property type for which the existence of a business value component is argued. Rushmore (1987) has stated:

The business component of a hotel's income stream accounts for the fact that a lodging facility is a labor-intensive, retail-type activity that depends upon customer acceptance and highly specialized management skills. In contrast to an apartment or office building where tenants sign leases for one or more years, a hotel experiences a complete turnover of patronage every two to four days. . . . Another facet of business value is the benefit that accrues from association with a recognized hotel company through either a franchise or management contract affiliation. Chain hotels generally out-perform independents and the added value created by increased profits is exclusively business-related.

Both Fisher and Kinnard (1990) and Fisher and Lentz (1990) cite the above statement and argue that the same logic should apply to retail shopping centers. However, when one dissects the logic, there are certain presumptions necessary to create a separate business value component for a hotel property appraisal. These presumptions include: (1) that excess profits might persist for some types of hotels, (2) that such excess profits on hotel-related business are not completely captured by the business owners, but rather are paid to the land owner, and/or (3) that some hotel operators can pay more in rent than others, and an owner is simply lucky to happen to have negotiated a deal with such an operator. Each of these points will be dealt with in turn.

For excess profits to persist in the long run is similar to the notion of an entrepreneurial value not captured by the originator of such value. In competitive markets, any advantages, be they related to reputation, technological advantages, marketing techniques, or others, are captured to the extent possible through the separate business entity value, when such entities are transferred. Excess profits are dissipated by higher business entity values. The early 1980s leveraged buy-out frenzy of corporate America certainly demonstrated how the market attempts to discover and capture such excess profits.

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If some hotels (such as parent-owned chains) are successful in developing a more successful hotel operation formula, with temporary excess profits due to entrepreneurial abilities, they will attempt to capture some of the present value of this excess in the form of franchise fees or royalties. The hotel investor should be able to receive a risk-adjusted return related to the potential hotel chain-related profits priced in such a manner that it considers the life cycle and needs of the parent hotel chain.<sup>15</sup> There is no reason to presume that any excess profits, be they temporary or not, will be paid in the form of excess market rent for the use at a site. It is only logical to assume that all business owners will pay the minimum rent necessary to capture a site (outbid other less profitable users) and no more.

Some hotel operators may pay more rent than others. A hotel chain in a growth mode, possibly with some competitive advantages, may decide to pay more than other hotels presuming they have sufficient working capital. If they are extremely unusual (perhaps new to the industry) it might turn out to be a “lucky” deal for the owner of the real property, relative to most other more dominant tenant types. But, over the long run, other new hotel operators will seek out and likely acquire these same competitive advantages, which, if they result in greater productivity with respect to the use of a site, will result in the ability to pay more rent. When the marginal hotel (or any user of land) owner has the ability to pay more rent, this higher rent will eventually become the market rent necessary to secure the right to use the site. All such users of land will then have to be at least as productive to bid on the site, and the higher rent will no longer be attributable to luck but market competition. Hotels that cannot pay the new, higher market rents simply will not survive in the long run.

We do not disagree with the belief expressed by Fisher and Kinnard (1990) and Fisher and Lentz (1990) that analyzing the issue of value separation with respect to hotels can be instructive to those attempting to determine the extent (if any) to which business value arguments should be applied to shopping centers. Rather, it appears that the hotel valuation issue provides an illuminating insight into why their means of differentiating between management or business value and property value are flawed. “Hotels, such as the Marriott, saw that their real expertise was in hotel management. They could profit by managing hotels and renting the property on a master lease from investors. To the extent that the Marriott, or any other manager, could make more profits than others, after paying market rents, they have pulled a business value from the income off of the property.”<sup>16</sup> However, this excess profitability to the manager, which is a result of outperforming other managers in revenue generation and/or cost efficiencies, need not be reflected in a competitor-driven market-based rent. That is, there is no reason to suspect that the excess profitability encourages a business manager to pay above-market rents. This, in turn, means that there is no need to adjust the value of the land for any business value.

### ***Empirical Testing for Business Value***

The argument for the existence of business enterprise value has not been limited to theoretical justifications. Fisher and Lentz (1990) provide an empirical test seeking to establish an estimate of the business value component of a shopping center in which they regress the log of total rents per square foot on three series of independent variables. Each of these series includes a dummy variable indicating whether the lease in question is a

renewal. Fisher and Lentz find a positive relationship between the “renewal” dummy variable and rent levels, and interpret this relationship as being attributable to business value.

However, as Karvel and Patchin (1992) point out, there are other possible explanations for such a “renewal premium.” They argue, “It is just as likely that renewed leases for successful businesses represent the market rate and initial leases are offered at a discount to encourage new enterprises to locate in a particular mall.”

This argument seems sensible for several reasons. First, moving has both direct and indirect costs associated with it, and one would be hard-pressed to argue that such costs result only from the loss of “business value.” There are various transactions costs associated with negotiating a lease and moving to a new location. Tenants are highly motivated to stay in a place where they have familiar patterns of working with customers, suppliers and employees. There are also direct costs associated with moving. Finally, there is the opportunity cost of lost business, certainly during the move and possibly afterwards, depending on the wisdom of the relocation choice.

One might argue that such lost business represents only the disappearance of “excess” store profitability attributable to the entrepreneurial and management skill of the owners of the mall with which the store currently has a lease. However, there are problems with that argument as well. For instance, it would be difficult to classify the loss of business during a move as the loss of “excess” profits. It could, instead, reflect the loss of quite ordinary profits associated with running the store. (In fact, during the course of the move, one ordinarily would expect not only the temporary disappearance of profits, but also an outright loss based on the continuation of at least some fixed operating expenses.)

Also, potential loss of business after a move might reflect relative disadvantages of location per se, rather than differential managerial abilities. The value of location itself is as certainly a part of real estate value as is the value of bricks and mortar or management approach. Some lost business might also be expected due to the fact that the clientele that was built up over a period of time in the previous location cannot be replaced without considerable time, effort and expense. And, we are still faced with the existence of transactions costs and direct moving costs.

Thus, whether one thinks of the apparent gap between renewals and new tenants as the equilibrium differential necessary to provide an incentive to prospective new tenants, or simply as taking advantage of the costs of moving and the value of existing relationships to an existing tenant, there are clearly non-business value-related reasons for the gap to exist. In the absence of a business value component, we would expect that in equilibrium the size of this gap should equal the present value of direct and indirect costs of relocation. There are actually two equilibrium rent levels in the market at all times—one for existing tenants and one for prospective new tenants.<sup>17</sup>

In a parallel context, one might consider the residential leasing market. The offer of “one month’s free rent” or “three months’ reduced rent” is a relatively common incentive. However, this incentive is provided far more frequently to new tenants than to existing tenants considering renewal. Particularly in the case of the majority of renters, who do not operate any retail business out of their homes, it seems probable that such differential policies have little to do with any “business enterprise value” associated with remaining in a particular apartment complex. Rather, these policies reflect the fact that moving involves both direct dollar costs and opportunity costs (in this case time rather than sales).

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## **The Case for the Land Residual Theory**

### ***The Development Option***

As outlined above, all land prices should include an option value based on the potential increase in value if conversion to new uses is possible in the future. For instance, a potential buyer of a parcel of land will almost certainly be willing to pay more for a parcel of land that is, or is deemed likely to become, zoned for the purpose the buyer desires. And, *ceteris paribus*, the value of the land to the potential buyer increases as the odds of a favorable zoning decision improve. The reason is that the land in question holds a value beyond that implied by its present use, with the additional value representing the value of the conversion option.

If these options are properly priced, then the total value of retail property within a given market area will be relatively constant at any given point in time. So, to the extent that some property location captures a larger market share of the retail dollar, or gains an early foothold, the value of other properties within the competitive area will fall.<sup>18</sup>

Thus, to argue that the “true real estate value” of a completed and successful shopping center site is no more than that of a similar undeveloped nearby parcel, plus the “bricks and mortar” value of improvements, ignores the fact that the retail potential of alternative sites has been lessened by any given development, and that those sites are therefore worth less if placed into the same land use. To the extent that retail land use produces the greatest productivity per unit of space in the area in question, the alternative land parcels will actually become worth less than before.

An example of this can be seen in the case of developers fighting to be the first into a new market area. If, for instance, a given area comes to be seen as a prime location for a shopping mall, developers will “race” to put together a complete package of financing, permits, etc. Once one developer has won this race, the other project may well be called off as the other developer (or his/her prospective sources of financing) faces the reality that, while the area had the potential to provide a lucrative market for one shopping center, it cannot possibly hope to support two. At this point, the value of the second developer’s land will most likely decline, as the most-valued option disappears. Other land parcels in the area would also decline in value, although much of their decline might well take place when it becomes clear that the race is on and they are not part of it.

From a property tax administrator’s point of view, the total property tax collected is primarily redistributed when development occurs, with some parcels increasing in value and others declining in value as the option value inherent in all sites declines. New improvements can create net productivity gains that increase the total sum of all property values in an area. But, to the extent that a new shopping center takes business away from one already in existence, the value of that existing shopping center declines.<sup>19</sup>

### ***The Persistence of Entrepreneurial Profits***

In the short run, entrepreneurial profits are possible based on design and on the types of business decisions and other factors inherent in development of a shopping center. These profits should not be confused with the ability of a parcel to maintain a component of value based on such factors. When the asset is transferred to a new owner or recapitalized, the entrepreneurial profit is captured. One might argue that a particular group of shopping center developers has a unique set of design skills, or a unique set of leasing skills, or a unique marketing program for the merchants’ associations.<sup>20</sup> And



based on these unique talents, they can create and maintain shopping centers worth more than those of any other developer. Even with such unique skills, one must be reminded that in a competitive and dynamic market, new talent will always force the frontier out in terms of competitive factors of production. Few of these factors of production, at least in the case of real estate development, are patentable whereby any protection from competitive forces can be maintained. Skills such as the ability to produce an ideal tenant mix, or a great parking plan, or an innovative marketing program, are inescapable from the sight of the competition, and over time any and all temporarily advantageous approaches to developing and operating a shopping center will lose this edge. Over time, the skills and inputs necessary just to survive as a shopping center developer and manager will increase, and any marginal excess productivity from skills thought to be unique will be gone.

### ***Negative Business Value?***

The differences of opinion on this issue that exist within the community of scholars are, of course, academic in nature. As noted above, however, there are more pragmatic reasons for owners to find merit in the notion of business enterprise value. There are nonetheless equally practical reasons for owners to think twice before rushing to espouse the idea of entrepreneurial value.

Specifically, the entrepreneurial value argument raises interesting questions when major development mistakes are made, such as poor access, poor design, poor tenant mix, and so on. Would the owner of such a shopping center wish to pay a higher property tax than that implied by the residual theory of land value, based on the notion that “entrepreneurial value” is negative? Or, would the owner wish to attribute this “negative value” to the site? The desired bias is obvious, but sophisticated property tax assessors are unlikely to prove willing to let owners have it both ways.

From an owner’s perspective, trying to separate out business value components on highly successful centers could backfire if adopted across the board as the accepted theory for all sites, including the unsuccessful centers.

## **Conclusion**

The traditional land residual theory has come under increasing attack in recent years. In both a theoretical and an empirical context, noteworthy attempts have been made to advance the alternative notion of a “business value” component in the overall value of a site, and to apply this idea to retail shopping centers. A critical feature of this concept is the argument that, to the extent that business value is erroneously included in assessing the real value of a site, property taxes on the real estate will be inadvertently biased upward, and that a center’s business value ought to be subtracted from its overall value in assessing taxable real estate value.

We believe otherwise. We question the assumption that the observed discrepancy between lease renewals and new leases in retail shopping malls can be explained only by the presence of a business value in these malls. We argue instead that the various costs of moving and the value of existing business relationships create an incentive for existing tenants to stay where they are. This incentive to stay allows malls to charge more for renewals, but creates the need for malls wanting new tenants to provide offsetting inducements for relocation.

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We argue further that the total value of retail property (or potential retail property) in a given market area should be relatively constant at a given point in time, although we note that the appropriate geographic area of competition is rapidly expanding because of both electronic marketing and global travellers. As long as economic productivity expands and corresponding future retail demand increases, all land legally permitted to address retail uses will contain an option value, based on the potential for development for future uses. To the extent that development occurs, the option value of surrounding land within the same market area, which would otherwise be best suited to that same use, is reduced. Also, to the extent that a new shopping mall takes business away from an existing mall, the value of the existing mall falls. Thus, land values would be redistributed; total land value within a given relevant geographic market need not change unless economic productivity in general has changed.

We are, in the final analysis, unconvinced that there is any need to adjust the real estate value assessments of retail shopping malls for their "entrepreneurial values." And, we hasten to remind owners that a business value concept, applied across the board, would of necessity include the possibility of negative business values. Assessors might well be inclined to argue that in many cases poor business judgment has rendered a property's market *below* the level implied by its pure real estate value, and to adjust appraisals accordingly. In an overbuilt market like that of the 1990s, owners would be well advised to leave entrepreneurial values alone.

## Notes

<sup>1</sup>The beginnings of classical rent theory from the early 1880s are associated with Ricardo and von Thunen, who were concerned with agricultural rents and transportation costs to a centralized market. Ricardo (1891) recognized differences in productivity inherent in location, while von Thunen (1966) added the cost factor of transporting goods to the market for exchange. The rental price of land became a function of both productivity and transportation costs.

<sup>2</sup>Increased productivity will result in a net increase in the sum of all area property values. It is also possible to imagine an increase in the sum of all property values within a defined region, when the region is geographically surrounded by additional market potential. In this case, it is somewhat arbitrary to define a precise geographic area as a submarket, and to presume that no leakage of the purchasing power occurs in either direction. With market leakage, total property values and taxes collected may actually go up in a given submarket after a new development occurs.

In the context of the new information technology and myriad potential retail marketing and distribution methods often involving non-store shopping discussed by Roulac (1994), retailers at the regional, national, or even the world level compete for a given share of purchasing power. With such a global view, the decrease in the option value in adjoining land sites would be less observable, since the impact of one increasingly successful retail land use is dissipated over such a much larger and less observable geographic area.

<sup>3</sup>Clearly, recent papers on this subject are correct in pointing out that entrepreneurial value can be created through the necessary combination of creativity, intelligence, diligence, and perhaps serendipity. Superior design, aesthetics and tenant mix decisions are part of the entrepreneurial contribution to development value. Such value enhancing attributes are likely to be captured by the original owners of a development. It is our argument that such entrepreneurial values must ultimately do one of two things: disappear (that is, fail to persist over the long run) as a result of competitive responses, or be captured by their creators.

<sup>4</sup>This argument builds upon the work of George R. Karvel and Peter J. Patchin (1992).

<sup>5</sup>Monopoly attributes in a particular property create value superior to that of similar proximate

properties. Among those attributes that create singular value for a given site are access, views, soils, permitted land use, and the like.

<sup>6</sup>The arguments made here are not exclusively appropriate to shopping centers, but apply to all real estate property types in general.

<sup>7</sup>See Mills (1972), p. 40. Classic economic theory suggests that the residual value of land is dependent on site productivity and transportation costs. The beginnings of classical rent theory are associated with Ricardo and von Thunen, whose views are explained in a succinct manner by Mills (1972) and are briefly summarized below. Ricardo (1891) recognized differences in productivity inherent in location as a result of weather or soil fertility. Mills describes Ricardo's notion as the idea "that land rent is a residual, equal to the excess of revenues from the sale of goods produced on the land over remunerations to non-land factors used in production," (p. 40) and then explains Ricardo's argument as follows.

Given parcels of land with varying degrees of productivity, potential users of the land will begin with the land best suited for that purpose and work their way down until demand is met. Prices will be just enough to cover the non-land costs of production on the lowest grade land in use; rent for that land is therefore theoretically zero. Higher grade parcels of land will command positive rents equal to the value of their "excess productivity" over the land in use. Wicksteed (1955) and Wicksell (1934–35) subsequently discussed the links between the "residual" theory and the neoclassical marginal productivity theory.

Von Thunen (1966) added the cost factor of transporting goods to the market for exchange, which makes the theory far more relevant to the case of urban economics. Here, the key issue in valuing land is not "fertility" in the agricultural sense, but rather overall productivity or utility of any type. The rental price of land became a function of the productivity of a given site *and* the cost of transporting goods to the market. One could have argued instead that the price of land was merely an exogenous factor in the price of any goods produced on the land, but such an argument would ignore the competitive market for substitutable land. In such a market, land rents will be driven toward the market-clearing price.

Roulac (1994) has more recently argued that electronic shopping trends are in some cases eliminating the need for a trip to the mall, creating a situation where transportation costs are driven towards zero, and consumer access becomes less important than before. Such an effect flattens out the slope of the bid rent or value function described below. For such retailing modes that are essentially warehouse centers, access to efficient distribution would be a dominant factor in the site value determination, as opposed to consumer access.

<sup>8</sup>One could view the sum of all the distances to all potential customers in a gravity model framework. Gravity models can weigh multiple and potentially competing attractions in a framework that sums travel distances or times from any location of interest.

<sup>9</sup>The sales of any particular retail outlet will be affected by both agglomerative economies and competitive effects. For any particular outlet, the location decision will depend in part upon an effort to optimize the trade-off between the two.

<sup>10</sup>Increased productivity of land due to technological differences affecting most land uses would allow greater rent at all distances away from the market centers. These types of changes in productivity are assumed to be relatively stable over time.

<sup>11</sup>For further development of the relationship between call options and land values see Geltner, Riddiough and Strojanovic (1995), which builds upon the classical work of Titman (1985) and the more recent work of Capozza and Li (1994).

<sup>12</sup>The function,  $f$ , may be different with respect to discount rates for the current use value and future option value based on perceived risk. This function essentially requires a discount rate based on the expected riskiness of the returns from time 0 to the time that conversion may occur, along with periodic estimates of the returns from the current use period. The future use value also requires return and risk estimates. Clearly, the potential conversion dates must be consistent between both value components, and part of the uncertainty which affects the discount rates used is the potential conversion date.

<sup>13</sup>JMB Group Trust IV v. Board of Review of the Village of Greendale et al., Wisconsin Court of Appeals, District 1, July 23, 1992, No. 90-2546, p. 17.

<sup>14</sup>In the case where an assignable long-term lease is below the competitive "market" rent level, there will be a temporary windfall benefit to the business owner, which could positively affect the value of the business, to the detriment of the land value. This effect is similar to entrepreneurial values in that they should be captured by those parties creating or locking into the "value." In the long run, competitive rents are presumed in this analysis.

<sup>15</sup>For example, a newer chain gains many benefits from discounting the franchise fees or royalty fees simply to gain faster growth and greater market share in the future. An older mature chain is less likely to want to make such trade-offs, and will attempt to more fully capture all chain-related economies or advantages.

<sup>16</sup>Anonymous reviewer comment on an earlier draft.

<sup>17</sup>In an academic context, this might be compared to the often-observed difference between the salaries of current and prospective faculty members having roughly equal track records. The various costs and risks associated with making a move from an existing "comfortable" situation require that, in order to lure new faculty members, a school must offer such prospects a somewhat greater salary than is required to keep equally desirable scholars on board.

<sup>18</sup>Again we recognize that relevant geographic areas will expand greatly as we enter a technologically advanced retail age, and that it will become more difficult to associate increased productivity for one site with decreased productivity at another site. Nevertheless, there is only so much productivity and spending power in the nation or world at one point in time, and with an excess capacity of retail systems, gains in one business must come from declines in another business.

<sup>19</sup>One cannot presume that the demand for the new development emerges from thin air. Most demand, at a given point in time, must be at the expense of other alternative providers.

<sup>20</sup>It is interesting to note that in the ULI surveys of developers, published in the text titled *Managing a Development Company*, 1987, almost all developers think that they are uniquely able to develop above-average buildings with respect to design and tenant mix. Self-confidence, through at least 1986, was pervasive.

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